

### **REMARKS**

Claims 1-26 are pending in the application. Claims 1-20 have been withdrawn from the application as being directed to a non-elected invention. Claims 10, 12, and 14 have been cancelled from the application. New claims 27-29 have been added to the application. Therefore, claims 21-29 are at issue.

Claim 21 has been reworded as an independent claim by inserting the features of claim 1 into claim 21. New claims 27-29 are supported by original claims 7, 10, 12, and 15, and the specification at page 5, lines 2-4. No new matter has been added to the claims.

Claims 21-26 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to distinguish the surface postcrosslinker from the polyvalent metal cation. In response, applicants have amended claim 21 to recite that the surface postcrosslinker is capable of forming covalent bonds with carboxyl groups. Support for this amendment can be found in the specification at page 1, line 32 through page 2, line 11 and page 4, lines 17-39. In view of this amendment to claim 21, it is submitted that the rejection of claims 21-26 under 35 U.S.C. §112 as being indefinite has been overcome and should be withdrawn.

Claims 21 and 24-26 stand rejected under 35 U.S.C. §102(b) as being anticipated by, or in the alternative under 35 U.S.C. §103 as being obvious over, Frenz et al. U.S. Patent Publication No. 2002/0128618 ('618 publication). The basis of the rejection is that the '618 publication, in Example 1, discloses a presently claimed water-absorbing polymer except for particle size distribution, which is asserted to be an inherent property. Applicants traverse this rejection.

The present claims recite a water-absorbing polymer having (a) saline flow conductivity (SFC) of not less than  $80 \times 10^{-7} \text{ cm}^3 \text{ s/g}$  and (b) not less than 80% by weight of particles between 150 and 600  $\mu\text{m}$  in size. Independent claim 21 also recites that the water-absorbing polymer has 0.01% to 0.5%, by weight, surface postcrosslinker and 0.001% to 0.5%, by weight, of polyvalent cation. As claimed, the water-absorbing polymer is prepared by mixing a solution of the surface crosslinker and a solution of the polyvalent cation with a

base polymer, wherein the two solutions are metered wholly or partly concurrently through separate nozzles.

It is axiomatic that “[A] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). A determination that a claim is anticipated under 35 USC §102 involves two analytical steps. First, the Patent Office must interpret the claim language, where necessary, to ascertain its meaning and scope. In interpreting the claim language, the Patent Office is permitted to attribute to the claims only their broadest *reasonable* meaning as understood by persons having ordinary skill in the art, considered in view of the entire disclosure of the specification. *See In re Buszard*, 504 F.3d 1364 (Fed. Cir. 2007) (reversing a Patent Office decision that applied an unreasonably broad interpretation to a claim); *see also, In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). Second, the Patent Office must compare the construed claim to a single prior art reference and set forth factual findings that “each and every limitation is found either expressly or inherently [disclosed] in [that] single prior art reference.” *Celeritas Techs. Ltd. V. Rockwell Int’l Corp.*, 150 F.3d 1354, 1360 (Fed. Cir. 1998). Additionally, “[t]he identical invention must be shown in as complete detail as is contained in the patent claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989).

With further respect to a rejection under 35 U.S.C. §102(b), MPEP §2131 states:

"TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM"

'A claim is anticipated only if each and every elements as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)...'The identical invention must be shown in as complete detail as is contained in the...claim.' *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."

It also is well settled that to support a rejection based on inherency, the examiner *must* provide evidence showing that any missing descriptive matter is *necessarily* present. Inherency cannot be established by probabilities or possibilities. See MPEP §2112 IV (pages 2100-57) stating:

"*In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'"

In this case, the missing descriptive matter the claimed particle size distribution of the water-absorbing particle. As demonstrated below, a small particle size coupled with a high SFC is unexpected in the art.

The '618 publication discloses pre-selecting a swellable base polymer (such as Example 1 of the '618 publication), then coating the pre-selected base polymer with steric or electrostatic spacers (as in Example 5 of the '618 publication). According to Examples 1 and 5, the polymer is classified to 100-850  $\mu\text{m}$ , the organic crosslinking agent is applied first and cured (Example 1), followed by mixing with aluminum sulfate (Example 5).

As correctly stated by the examiner, the '618 publication fails to disclose the particle size distribution recited in claim 21, i.e., not less than 80% by weight of particles between 150 and 600  $\mu\text{m}$  in size. The examiner however asserts that this claimed feature is inherent in the '618 publication. This assertion is incorrect.

As stated above, for an examiner to rely upon an inherency theory, any descriptive matter missing from the cited references *must* necessarily be present, and inherency cannot be established by probabilities or possibilities. In this case, the teaching in the '618 publication that the particles are classified into a distribution of 100-850  $\mu\text{m}$  does *not* necessarily translate to at least 80%, by weight, of the particles within the claimed range of 150 to 600  $\mu\text{m}$ .

For example, the examiner is directed to WO 2008/123477, submitted concurrently with this response as Exhibit A. In particular, the examiner is directed to Table 1 at page 55, wherein for particulate water absorbent resin A the percentage of particles between 150 and 600  $\mu\text{m}$  is only 68.3%, by weight, for a classification of 106-850  $\mu\text{m}$ . In view of this teaching, the examiner's assertion of inherency cannot be maintained.

As demonstrated above, differences exist between the '618 publication and present claims 21 and 24-26 such that the rejection of these claims under 35 U.S.C. §102(b) as being anticipated by the '618 publication should be withdrawn. It is further submitted that claims 21 and 24-26 would not have been obvious over the '618 publication.

A determination that a claimed invention would have been obvious under §103(a) is a legal conclusion involving four factual inquiries: (1) the scope and content of the prior art; (2) the differences between the claimed invention and the prior art; (2) the differences between the claimed invention and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Obviousness is determined from the vantage point of a hypothetical person having ordinary skill in the art which the claimed subject matter pertains, who is presumed to have all prior art references in the field of the invention available to him/her. In *re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). Furthermore, obviousness must be determined as of the time the invention was made and in view of the state of the art that existed at that time. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050-51 (Fed. Cir. 1988).

The Patent Office must clearly articulate facts and reasons why the claimed invention "as a whole" would have been obvious to a hypothetical person having ordinary skill in the art at least as of the claimed invention's effective filing date. *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007) (citing with approval In *re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]jections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.")); see also MPEP §2143 ("The key to supporting any rejection under 35 U.S.C. §103 is the clear articulation of reason(s) why the claimed invention would have been obvious.").

To reach a proper determination under 35 U.S.C. §103(a), the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicants' disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search, and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the *facts* gleaned from the prior art. MPEP §2142.

As articulated by the Court of Appeals for the Federal Circuit in *Ortho-McNeil Pharmaceutical Inc. v. Mylan Laboratories Inc.*, 86 USPQ 2d, 1196, 1201-2 (Fed. Cir. 2008):

"As this court has explained, however, a flexible TSM test remains the primary guarantee against a non-statutory hindsight analysis such as occurred in this case. *In re Translogic Tech., Inc.* 504 F.3d 1249, 1257 [84 USPQ 2d 1929] (Fed. Cir. 2007) ("[A]s the Supreme Court suggests, a flexible approach to the TSM test prevents hindsight and focuses on evidence before the time of invention.)."

Furthermore, to establish a *prima facie* case of obviousness, the examiner must satisfy three requirements. First, and importantly, the prior art references must teach or suggest *all* the limitations of the claims. *In re Wilson*, 165 USPQ 494, 496 (C.C.P.A. 1970). Second, as the U.S. Supreme Court held in *KSR International Co. v. Teleflex Inc. et al.*, 127 S.Ct. 1727 (2007), "a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. ...it [may] be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an *apparent reason* to combine the known elements in the fashion claimed by the patent at issue. ...it can be important to *identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements* in the way the claimed new invention does... because inventions in most, if not all, instances rely upon building blocks

long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." (emphasis added, *KSR, supra*). Third, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *Amgen Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991).

In addition, applicants respectfully note that MPEP §§2142 and 2143 require that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure. *In re Vaeck*, 947 F.2d 4899 (Fed. Cir. 1991). The mere fact that the prior art may be modified in the manner suggested by the examiner does *not* make the modification obvious unless the prior art suggests the desirability of the modification. *In re Gordan*, 733, F.2d at 902, 221 USPQ at 1127. *In re Fritch*, 23 USPQ 2<sup>nd</sup> 1780, 1783-1784 (Fed. Cir. 1992). It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. *In re Gorman*, 933 Fed. 2<sup>nd</sup> 982, 987, 18 USPQ 2<sup>nd</sup> 1885, 1888 (Fed. Cir. 1991). *In re Fritch*, 23 USPQ 2<sup>nd</sup> 1780 at 1784 (Fed. Cir. 1992).

The Court in *KSR* held that a patent composed of several elements is not proved obvious merely by demonstrating that each of the elements was, independently, known in the prior art (*KSR*, 127 S.Ct. at 1741). The court further emphasized the importance of *identifying a reason* that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does, which the examiner has not provided (*Id.*, emphasis added).

As stated above, the '618 publication discloses surface postcrosslinking a base polymer (Example 1), then coating the postcrosslinked with aluminum sulfate. Treatment with the aluminum salt improves the SFC (compare Example 1 to Example 5). The particles of the '618 publication have a particle size distribution of 100-850  $\mu\text{m}$  ('618 publication, paragraph [0123]).

At paragraph [0013], the '618 publication teaches that SFC increases with increasing particle size. This explicit teaching leads persons skilled in the art to using larger sized particles in order to improve SFC.

At paragraph [0006], the '618 publication also teaches that Absorbency Under Load (AUL) is increased by surface crosslinking. The '618 patent therefore teaches two independent methods of improving absorption properties, i.e., surface crosslinking and increased particle size. Conversely, the '618 publication leads persons skilled in the art away from decreasing particle size.

Independent claim 26 recites a relatively high SFC *and* a small particle size of at least 80%, by weight, between 150 and 600  $\mu\text{m}$ , when the particles are prepared by the claimed process. This is in direct contrast to the explicit teachings of the '618 publication and is unexpected in the art. After reading the '618 publication, a person skilled in the art would have had no incentive to reduce particle size with any reasonable expectation of providing a high SFC value. After reading the '618 publication, a skilled person would have at least maintained the particle size disclosed in the '618 publication. In fact, rather than considering reducing particle size to improve absorption (which is contrary to common knowledge in the art), the '618 publication teaches a skilled person an alternative method, i.e., surface postcrosslinking.

In summary, an increase in SFC and a decrease in particle size are conflicting parameters with respect absorption properties. It is applicants that were able to provide a high SFC at smaller particle sizes, contrary to common knowledge in the art. The '618 publication fails to disclose the claimed particle size range, and persons skilled in the art would have had no incentive to reduce particle size in view of the explicit teachings of the '618 publication, i.e., that reducing particle size *adversely effects* SFC.

In view of the above, it is submitted that claims 21 and 24-26 would not have been obvious over the '618 publication under 35 U.S.C. §103, and that the rejection should be withdrawn. It is further submitted that claims 27-29 would not have been obvious over the '618 publication for the same reasons that claim 21 is free of this reference. Further, it is

submitted that the features of new claim 27 are not disclosed in the '618 publication, thereby providing an additional reason why claim 27 is patentable over the '618 publication.

Claims 21-26 stand rejected under 35 U.S.C. §103 as being obvious over the '618 publication in view of Hermeling et al. U.S. Patent Publication No. 2005/0265387 ('387 publication). Applicants traverse this rejection.

The patentability of claims 21 and 24-26 over the '618 publication is discussed above. In particular, persons skilled in the art would have had no incentive to reduce particle size because SFC would be adversely affected, and because an alternative method (different from particle size adjustment) is available for improving absorption properties. The '387 publication fails to overcome the deficiencies of the '618 publication, but rather re-enforces applicants' arguments.

The '387 publication is directed to swellable polymers having a specific particle size distribution. In particular, the '387 publication is directed to swellable polymer particles of less than 250  $\mu\text{m}$  having an increased swell rate.

The '387 publication also teaches that SFC and Performance under Pressure (PUP) are dependent on particle size (see paragraph [0021]). PUP is related to AUL as disclosed in paragraph [0020] of the '387 publication.

In particular, paragraph [0022] of the '387 publication teaches that SFC increases with increasing particle size distribution (as also taught in the '618 publication), and that PUP (i.e., AUL) decreases with increasing particle size. The table between paragraph [0021] and [0022] of the '387 publication shows that particle size has a *substantial* effect on SFC, but a *minimal* effect on PUP. Further, the '387 publication teaches that improving absorption properties is "to shift the particle size spectrum to higher values" (paragraph [0023]). The '387 publication also teaches that the desired high absorption values (paragraph [0024]) are achieved by increasing crosslink density on the surface or within the polymer particle (paragraph [0025]). The '387 publication therefore provides teachings identical to the '618 publication with respect to improving properties, i.e., large particle size to improve SFC and surface postcrosslinking.



The '618 publication and '387 publication *each* teach that SFC is adversely affected by reducing particle size distribution. The two references also teach alternative and independent ways to improve absorption properties *without* adversely effecting SFC, i.e., crosslink density and larger particle sizes.

Persons skilled in the art therefore would have had no incentive to reduce particle size distribution with any reasonable expectation of maintaining a high SFC value. In fact, the combination of references leads persons in art away from a smaller particle sizes. It is submitted that rather than proceeding in direct contrast to the teachings of the references (and common knowledge in the art), persons skilled in the art would have followed one of the alternative methods disclosed in the references to improve absorption properties.

For all the reasons set forth above it is submitted that claims 21-26, and new claims 27-29, would not have been obvious over a combination of the '618 and '387 publications, and that the rejection should be withdrawn.

All pending claims are now in a form and scope for allowance. An early and favorable action on the merits is respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form in an effort to advance this application toward allowance, the examiner is urged to telephone the undersigned at the indicated number.

Dated: May 17, 2010

Respectfully submitted,

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